



# UNITED STATES PATENT AND TRADEMARK OFFICE

*den*

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,357	07/18/2003	Takashi Ohsawa	002372.00044	2565
22907	7590	11/07/2006	EXAMINER	
BANNER & WITCOFF 1001 G STREET N W SUITE 1100 WASHINGTON, DC 20001			TRAN, ANDREW Q	
			ART UNIT	PAPER NUMBER
			2824	

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/621,357

**Applicant(s)**

OHSAWA, TAKASHI

**Examiner**

Andrew Q. Tran

**Art Unit**

2824

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2006 and 05 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 23-31 and 33-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 27-31 is/are allowed.
- 6) ☒ Claim(s) 23-26 and 33-37 is/are rejected.
- 7) ☒ Claim(s) 38-44 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Abstract***

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The instant abstract contains numerous legal phraseology, such as "thereof" (page 91, line 4 and 5; or "thereby" (page 91, line 9). Further the reference numerals should be deleted or enclosed in parentheses.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

Art Unit: 2824

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 23-31 and 33-44 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 6,621,725.

Although the conflicting claims are not identical, they are not patentably distinct from each other because the respective claims are drawn to substantially similar semiconductor memory devices wherein in a first data state, excessive majority carriers are stored in a semiconductor/silicon layer by impact ionization; and in a second data state, excessive majority carriers are emitted from the semiconductor/silicon layer by a forward bias. See also MPEP § 804.01.

### ***Claim Rejections - 35 USC § 102***

Claims 23-26 and 33-37 are rejected under 35 U.S.C. 102(b) as being anticipated by Sasaki et al. (US Pat 4,250,569 hereafter "Sasaki"). See also Office Action of May 01, 2006, page 3-4.

In the Amendment filed July 24, 2006, Applicant argues that Sasaki's writing operation is different from that of claims 23 and 35. This is not found persuasive because Sasaki clearly teaches that a first data state is written by impact ionization, ie. "avalanche multiplication" (col. 6, ln. 32-34); and a second data state is written through a forward bias, ie. "a reverse-bias between the source/drain and the floating substrate" (col. 6, ln. 6-8).

Claims 23-26 and 33-37 are further rejected under 35 U.S.C. 102(b) as being anticipated by Koichi (JP Pub 5-86864 hereafter "Koichi"). See attached English translation, page 1-11.

Art Unit: 2824

As to claim 23, Koichi teaches in Fig. 1 a semiconductor memory comprising a floating P-type silicon layer 21, N-type drain 23 and source 22, wherein a first data state is written by impact ionization in which excessive majority carriers are held in silicon layer 21 (pg. 6, ln. 15-17); and a second data state is written by a forward bias in which excessive majority carriers are extracted from silicon layer 21 (ie. insufficient holes are stored in silicon layer 21, pg. 7, ln. 3-4).

As to claims 24-26, see also Fig. 1.

Claims 33-37 are rejected based on similar reasons.

Claims 23-26 and 33-37 are additionally rejected under 35 U.S.C. 102(b) as being anticipated by Hiroshi et al. (JP Pub 5-87027 hereafter "Hiroshi"). See attached English translation, page 1-9.

As to claim 23, Hiroshi teaches in Fig. 1 a semiconductor memory comprising a floating P-type silicon layer 21, N-type drain 23 and source 22, wherein a first data state is written by impact ionization in which excessive majority carriers are held in silicon layer 21 (pg. 7, ln. 2-3); and a second data state is written by a forward bias (Fig. 2a) in which excessive majority carriers are extracted from silicon layer 21 (pg. 6, ln. 13-14). As to claims 24-26, see also Fig. 1.

Claims 33-37 are rejected on similar grounds as set forth above.

#### ***Allowable Subject Matter***

Claims 27-31 are allowed.

Claims 38-44 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Adan (US Pat 6,693,326) describes a semiconductor device of SOI structure.

Ikehashi et al. (US Pat 6,825,524) describes a semiconductor integrated circuit device.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Q. Tran whose telephone number is (571) 272-1885. The examiner can normally be reached on Mon - Fri 8:30 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard T. Elms can be reached on (571) 272-1869. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Andrew Q Tran

Application/Control Number: 10/621,357

Page 6

Art Unit: 2824

Primary Examiner  
Art Unit 2824

at  
November 06, 2006